

process which is excellent in flexibility, soldering heat-resistance, heat deterioration-resistance, nonelectrolytic gold plating-resistance, acid resistance, and water resistance. Therefore, the composition may be suitable for the resist ink for developing in an organic solvent, water, or an aqueous alkaline solution, especially for a flexible printed circuit board.

Disclosure of the Invention

The present invention relates to the following items:

(1) An urethane oligomer (A) obtained by reacting a polyol compound(a) with a polybasic acid anhydride(b-1) having at least two acid anhydride groups per molecule, a polyisocyanate compound(c), and a hydroxy compound having ethylenically unsaturated groups and the salt thereof.

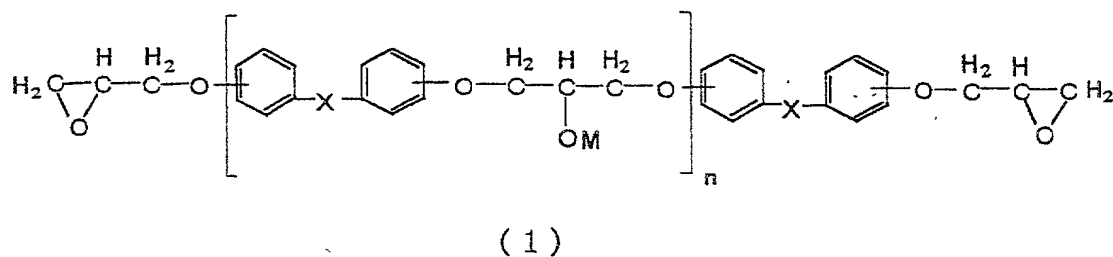
(2) An urethane oligomer(A) according to the above (1), wherein said polybasic acid anhydride(b) having at least two acid anhydride groups per molecule has an acid value of 200-1500mgKOH/g, and the salt thereof.

(3) An urethane oligomer (A) according to the above (1) or (2), wherein said urethane oligomer(A) has a weight-average molecular weight of 1,000-100,000, and the salt thereof.

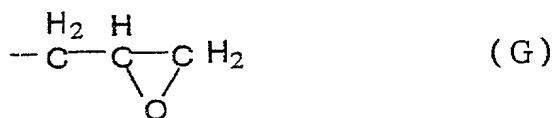
(4) An urethane oligomer (A) according to any of the above (1) to (3), wherein said urethane oligomer(A) has an acid value of 1-200mgKOH/g; and the salt thereof.

(5) A resin composition comprising an urethane oligomer(A) according to any of the above (1) to (4) and an unsaturated group-containing polycarboxylic acid resin(B) that is a product obtained by reacting an epoxy resin (e) having at least two epoxy groups per molecule with a monocarboxylic acid compound(f) having ethylenically unsaturated groups and a polybasic acid anhydride(b-2).

(6) A resin composition according to the above (5), wherein said epoxy resin (e) having at least two epoxy groups per molecule is represented by Formula (1):



(In the formula, X is -CH₂- or -C(CH₃)₂-, n is an integer of 1 or more, and M is hydrogen or a group represented by Formula (G) as shown below:



, provided that M is a group represented by Formula (G) if n is 1, while at least one M is a group represented by Formula

(G) and the remainders being hydrogen if n is an integer more than 1).

(7) A resin composition comprising an urethane oligomer(A) according to any of the above (1) to (4) and a thermoplastic polymer(D).

(8) A resin composition according to the above (5) or (6), further comprising a diluent(C).

(9) A resin composition according to the above (7) or (8), wherein said diluent(C) is a reactive diluent(C-1).

(10) A resin composition according to any of the above (5) to (9), comprising a photopolymerization initiator(E).

(11) A resin composition comprising an urethane oligomer(A) according to any of the above (1) to (4), a thermoplastic polymer(D) and a photopolymerization initiator(E).

(12) A resin composition according to the above (11), wherein said thermoplastic polymer(D) is a polymer having carboxyl groups.

(13) A resin composition according to any of the above (1) to (10), comprising a thermosetting component(F).

(14) A resin composition according to any of the above (5) to (13), wherein said resin composition is prepared for the solder resist in a printed circuit board or for an interlayer dielectric layer.

(15) A photosensitive film comprising being prepared by laminating the layer of a resin composition according to any